Duo at Santa Fe's Monte del Sol Charter School takes top award in 25th New Mexico Supercomputing Challenge

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Using nanotechnology robots to kill cancer cells

LOS ALAMOS, N.M., April 21, 2015—Meghan Hill and Katelynn James of Santa Fe's Monte del Sol Charter Sol took the top prize in the 25th New Mexico Supercomputing Challenge Tuesday at Los Alamos National Laboratory for their research project, "Using Concentrated Heat Systems to Shock the P53 Protein to Direct Cancer into Apoptosis." Their project, which posited that using nanotechnology robots can kill cancer cells without damaging healthy cells, also won several other awards in the challenge.

"The goal of the yearlong event is to teach student teams how to use powerful computers to analyze, model and solve real-world problems," said David Kratzer of Los Alamos' High Performance Computer Systems group, and executive director of the Supercomputing Challenge. "Participating students improve their understanding of technology by developing skills in scientific inquiry, modeling, computing, communications and teamwork."

The Albuquerque Academy trio of Carl Cherne, Mark Swiler and Jason Watlington took second place for their research, "Population Fluctuation in Ecosystems," which studied interactions between organisms and answers the question of how wild animal populations fluctuate.

Los Alamos High School student Jovan Zhang won third place for his research, "Number Theory Applied to RSA Encryption," which demonstrated RSA encryption methods using only elementary number theory and presented proofs.

A complete list of all winning student teams is on the New Mexico Supercomputing Challenge webpage. Read all the student reports online.

For a quarter century the challenge has

- excelled in helping state high school graduates go on to college in STEM areas
- improved the information based economy of the state of New Mexico by promoting computational thinking
- helped middle and high school students meet common core standards with academic excellence in math modeling, science and technical writing

- promoted collegiality and created excellent professional development to a community of educators.

The Supercomputing Challenge is open to any New Mexico high-school, middle-school or elementary-school student. More than 240 students representing 64 teams from schools around the state spent the school year researching scientific problems, developing sophisticated computer programs, and learning about computer science with mentors from the state's national laboratories and other organizations. All the finalist teams received plaques for their schools, a large banner suitable for hanging at their schools and other gifts.

More than $30,000 in individual scholarships were awarded at the Supercomputing Challenge Awards Expo on Tuesday, including $10,000 from an anonymous donor. Many other awards range from random $100 gifts for finishing the academic marathon to teamwork, research, logo design for next year's challenge and teacher appreciations.

The Supercomputing Challenge is sponsored by Los Alamos National Laboratory, Los Alamos National Security, LLC and the state of New Mexico. A complete list of sponsors and supporters of the Challenge is on the website.

About the Supercomputing Challenge

Founded in 1990, the New Mexico Supercomputing Challenge is a nonprofit educational organization that sponsors an annual computational science competition for middle- and high-school students in New Mexico.

Since its inception, the Supercomputing Challenge has engaged more than 10,000 New Mexico students in computational science projects that prepare them for future endeavors in many science and high-technology fields. Past participants have succeeded in private industry and national laboratories. Major funding for the Supercomputing Challenge comes from national laboratories, local and national businesses and individual donors.